

96. **BRAYA** Sternberg & Hoppe, Denkschr. Königl.-Baier. Bot. Ges. Regensburg 1: 65. 1815.

肉叶芥属 rou ye qi shu

Platypetalum R. Brown.

Herbs perennial with simple or many-branched caudices, sometimes forming cushions. Trichomes simple or forked. Basal leaves petiolate, rosulate, simple, entire or dentate, rarely pinnately lobed, petiolar base persistent. Cauline leaves absent, rarely few, sessile or nearly so, not auriculate, entire or rarely dentate. Racemes ebracteate or only lowermost flowers bracteate, elongated or not in fruit. Fruiting pedicels erect or divaricate. Sepals ovate or oblong, caducous or persistent, erect, base of lateral pair not saccate, margin membranous. Petals white, pink, or purple, rarely yellow, longer than sepals; blade obovate or oblanceolate, apex obtuse or rounded; claw shorter than sepals. Stamens 6, tetradynamous; filaments dilated at base; anthers ovate or oblong, obtuse at apex. Nectar glands 4, 1 on each side of lateral stamen; median glands absent. Ovules 4–26 per ovary. Fruit dehiscent siliques or silicles, linear, oblong, ovoid, or lanceolate, terete or slightly latisepate, sessile; valves with a distinct midvein, glabrous or pubescent, smooth or torulose; replum rounded; septum complete, membranous, translucent; style obsolete or to 1 mm; stigma capitate, entire or slightly 2-lobed. Seeds uniseriate or rarely biseriate, wingless, oblong or ovoid, plump; seed coat minutely reticulate, not mucilaginous when wetted; cotyledons incumbent.

Six polymorphic species: alpine, subarctic, or temperate regions of Asia, Europe, and North America; three species in China.

Braya siliquosa Bunge (from Kazakstan, Mongolia, and Russia) was recorded from Qinghai and Yunnan in FRPS, Fl. Qinghai. (1: 501. 1997), and Fl. Yunnan. (6: 117. 1995), but these records are based on misidentified plants of *Neotorularia humilis*.

- 1a. Petals yellow; inflorescence basally bracteate 1. *B. scharnhorstii*
- 1b. Petals white, lavender, or purple; inflorescence ebracteate.
 - 2a. Caudex extensively branched, densely covered with persistent petioles; trichomes exclusively simple; fruit hardly longer than sepals 2. *B. forrestii*
 - 2b. Caudex few branched or simple, often with few or no petiolar remains; at least some trichomes forked; fruit often longer than sepals 3. *B. rosea*

1. **Braya scharnhorstii** Regel & Schmalhausen, Trudy Imp. S.-Peterburgsk. Bot. Sada 5: 241. 1877.

黄花肉叶芥 huang hua rou ye qi

Beketovia tianschanica Krassnov; *Braya oxycarpa* J. D. Hooker & Thomson var. *scharnhorstii* (Regel & Schmalhausen) O. E. Schulz; *B. pamirica* (Korshinsky) O. Fedtschenko; *B. pamirica* var. *glabra* O. Fedtschenko; *B. sternbergii* Krassnov; *B. thomsonii* J. D. Hooker var. *pamirica* (Korshinsky) O. E. Schulz; *Erysimum pamiricum* Korshinsky; *Neotorularia pamirica* Z. X. An; *Solms-laubachia carnosifolia* Z. X. An.

Herbs densely caespitose, (2–)3–12(–17) cm tall, scapose, densely to sparsely pilose with short-stalked, forked trichomes often mixed with fewer simple ones; caudex densely covered with petiolar remains of previous years' growth, few to many branched. Basal leaves rosulate; petiole (2–)3–8(–11) mm, persistent and becoming papery, greatly expanded and to 3 mm wide at base, ciliate with simple trichomes; leaf blade linear to linear-oblanceolate, rarely oblanceolate, (0.2–)0.4–2.5(–4) cm × 0.5–1.5(–2) mm, densely pilose or glabrous, base attenuate, margin entire, apex obtuse. Cauline leaves sessile, similar to basal ones. Racemes bracteate along lower part, elongated in fruit. Fruiting pedicels ascending, 2–6(–10) mm. Sepals greenish, ovate or oblong, 2–2.5 × 1–1.5 mm, sparsely to densely

pubescent, broadly white margined. Petals yellow, broadly obovate, 3.5–5 × 1.5–3 mm, apex rounded; claw often pinkish, 1.5–2 mm. Filaments pinkish, 1.5–2.5 mm; anthers ovate, 0.5–0.6 mm. Ovules 6–14 per ovary. Fruit ovoid, oblong, or linear, (3–)4–8(–12) × 1–1.5 mm, puberulent, torulose; style 0.5–1 mm. Seeds ca. 1–1.4 × 0.5–0.6 mm. Fl. Jul–Aug, fr. Aug–Sep.

Stony slopes, sandy areas, mountains; 3500–5000 m. SW Xinjiang (Taxkorgan Tajik Zizhixian, Yecheng Xian) [Kyrgyzstan, Tajikistan].

The above first record of *Braya scharnhorstii* from China is based on the type collections of *Neotorularia pamirica* and *Solms-laubachia carnosifolia*, as well as on *Qinghai-Tibet Team 1151* (HNWP, KUN), from Yecheng Xian, and *Qinghai-Tibet Team 870474* (KUN), *Xinjiang Team 764* (MO, PE), *Xinjiang Team 1351* and *2240* (WUK), and *Zhu Guiling 56* (XJA), all from Taxkorgan Tajik Zizhixian.

This is the only species of the genus with yellow flowers, pinkish petal claws, and bracteate racemes. *Braya pamirica* differs from *B. scharnhorstii* only in having longer fruit, and the difference appears to be continuous and unreliable. The species is highly variable in the density of indumentum, and forms with glabrescent or variously pubescent leaf blades exist.

2. **Braya forrestii** W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 119. 1913.

弗氏肉叶芥 fu shi rou ye qi

Braya forrestii var. *puberula* W. T. Wang.

Herbs densely caespitose, (0.7–)1.5–5.5(–6.5) cm tall, scapose, densely to sparsely pilose with exclusively simple trichomes to 1 mm, rarely glabrous throughout except for petiole margin and leaf apex; caudex densely covered with petiolar remains of previous years, up to 40-branched, unbranched basal portion to 3 cm in diam. Basal leaves rosulate; petiole (2–)4–10(–15) mm, persistent and becoming papery, greatly expanded and to 4 mm wide at base, ciliate; leaf blade linear to linear-oblongate, rarely broadly oblanceolate, (0.3–)1–2.8(–3.5) cm × 0.5–2(–4) mm, densely to sparsely pilose, rarely glabrous except for a few trichomes at leaf apex, base attenuate, margin entire, apex obtuse or acute. Scapes spreading or retrose pilose, leafless. Racemes ebracteate, not elongated and to 8 mm in fruit. Fruiting pedicels ascending, 2–5 mm. Sepals subapically purple, ovate or oblong, 2.5–3 × 1.5–2 mm, glabrous or pubescent, broadly white margined. Petals purple, pink, or white, broadly obovate, 4–6 × 2–3 mm, apex rounded; claw 1.5–2.5 mm. Filaments 2–3 mm; anthers oblong, 0.6–0.8 mm. Ovules 4–8 per ovary. Fruit ovoid, 4–7 × 1.5–3 mm, glabrous or puberulent; style 0.5–1 mm. Seeds ca. 1.7 × 0.9 mm. Fl. May–Jul, fr. Jul–Aug.

Alpine turf and scree, rocky pastures; 3700–5000 m. Sichuan, Xizang, Yunnan [Bhutan].

3. *Braya rosea* (Turczaninow) Bunge, Delect. Seminum Hort. Bot. Dorpat. 1839: 7. 1839.

红花肉叶芥 hong hua rou ye qi

Platypetalum roseum Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 11: 87. 1838; *Braya aenea* Bunge; *B. aenea* subsp. *pseudoaenia* Petrovsky; *B. angustifolia* (N. Busch) Vassilczenko; *B. brachycarpa* Vassilczenko; *B. brevicaulis* Em. Schmid; *B. limosella* Bunge; *B. limoselloides* Bunge ex Ledebour; *B. rosea* var. *aenea* (Bunge) Malyshev; *B. rosea* var. *brachycarpa* (Vassilczenko) Malyshev; *B. rosea* var. *glabra* Regel & Schmalhaus; *B. rosea* var. *leiocarpa* O. E. Schulz; *B. rosea* var. *multicaulis* B. Fedtschenko; *B. rosea* var. *simplicior* B. Fedtschenko; *B. sinuata* Maximowicz; *Braya thomsonii* J. D. Hooker; *B. tibetica* J. D. Hooker & Thomson; *B. tibetica* f. *breviscapa* Pampanini; *B. tibetica* f. *linearifolia* Z. X. An; *B. tibetica* f. *sinuata* (Maximowicz) O. E. Schulz; *B. tinkleri* Em. Schmid; *Hesperis limosella* (Bunge) Kuntze; *H. limoselloides* (Bunge ex Ledebour) Kuntze; *H. rosea* (Turczaninow) Kuntze; *Sisymbrium alpinum* (Sternberg & Hoppe) Fournier var. *aeneum* (Bunge) Trautvetter; *S. alpinum* var. *roseum* (Turczaninow) Trautvetter; *S. limosella* (Bunge) Fournier.

Herbs (1–)3–10(–16) cm tall, scapose, densely to sparsely pilose with short-stalked, forked trichomes sometimes mixed with simple ones, rarely glabrous throughout except for petiole margin; caudex slender, sometimes with petiolar remains of previous years,

simple or few branched. Basal leaves rosulate; petiole (0.2–)0.4–1.6(–3) cm, slender or slightly expanded at base, ciliate; leaf blade linear, oblong, oblanceolate, obovate, (0.4–)1–3(–4) cm × 0.5–3.5(–6) mm, densely to sparsely pilose or glabrous, base attenuate, margin entire, dentate, or sinuate, apex obtuse or acute. Scapes densely pilose or glabrous, leafless or rarely 1-leaved. Racemes ebracteate, capitate or rarely considerably elongated in fruit. Fruiting pedicels divaricate or ascending, 1.5–5(–7) mm. Sepals subapically purple or greenish, oblong, 1.5–2.5(–3) × 1–1.2 mm, glabrous or densely pubescent, broadly white margined. Petals purple, pink, or white, spatulate or obovate, (2.5–)3–4(–4.5) × (0.7–)1–1.5 mm, apex obtuse. Filaments 1.3–1.8 mm; anthers ovate, ca. 0.3 mm. Ovules 8–12 per ovary. Fruit ovoid or oblong, (2–)3–6.5(–8) × 1–2 mm, glabrous or densely pubescent; style 0.2–0.7(–1) mm. Seeds ca. 0.7–1 × 0.4–0.5 mm. Fl. Jun–Jul, fr. Jul–Sep.

Mountain slopes, river banks, scree, weathered marble rocks and debris, steppe, alpine cushions; 2500–5300 m. Gansu, Qinghai, Sichuan, Xinjiang, Xizang [Bhutan, India, Kashmir, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan].

Critical examination of numerous collections of *Braya aenea*, *B. rosea*, *B. thomsonii*, and *B. tibetica*, including types and authentic material, reveal that there is not a single character that can be used reliably to distinguish these “species.” These and the other synonyms above represent “taxa” that are based on a small portion of the numerous morphological extremes of *B. rosea*. The species shows continuous variation in amount of indumentum, leaf shape and margin, relative length of scape to basal rosette, duration of sepals, petal color and shape, and fruit shape and length. In the absence of detailed field work and experimental studies, the present authors prefer not to recognize any of the taxa described in this complex.

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